

Debugging and Event Tracing for Multi-Agent Systems, Phase II

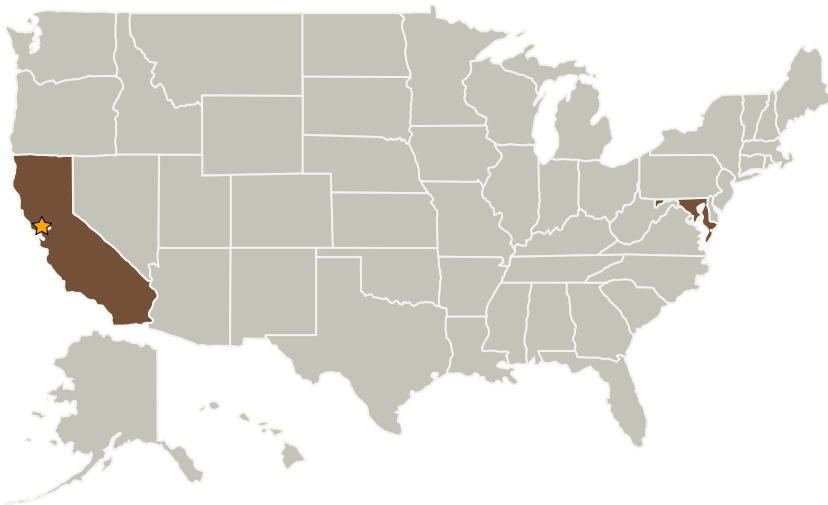
Completed Technology Project (2006 - 2008)



Project Introduction

Large-scale agent systems have become a key part of in modeling and simulation tools such as NASA's Airspace Concept Evaluation System (ACES), an agent-based simulation of the National Airspace System (NAS). As distributed real-world systems comprised of many autonomous decision-making entities become more complex, so do their corresponding individual models and simulation systems. However, existing tools for low-level single host debugging, data and event collection and local analysis do not adequately address the problem of understanding large distributed systems consisting of thousands of autonomously executing agents. In this Phase II effort, we propose to create a comprehensive semantic debugging and knowledge discovery and analysis system for agent-based simulations called IntelliTrace. The key innovation behind semantic and model driven system analysis is that it will bridge the gap between the semantics of model execution and the resultant implementation behavior realized within a software system. We will use these tools and capabilities to develop and demonstrate a methodology and approach for application-level analysis, knowledge and discovery and data mining and analysis.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Intelligent Automation, Inc.	Supporting Organization	Industry	Rockville, Maryland

Primary U.S. Work Locations

California	Maryland
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.5 Mission Architecture, Systems Analysis and Concept Development
 - └ TX11.5.2 Tools and Methodologies for Performing Systems Analysis